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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,089	02/27/2004	Masaaki Kojima	248743US90DIV	4285
22850 7590 08/23/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER MERKLING, MATTHEW J	
			ART UNIT 1764	PAPER NUMBER
			NOTIFICATION DATE 08/23/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/787,089

Applicant(s)

KOJIMA, MASAOKI

Examiner

Matthew J. Merkling

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Ono et al. (JP 11-236813 A1).

Regarding claim 1, Ono discloses an exhaust gas purification apparatus comprising:

a casing ([0024]);

a honeycomb-like filter (see claim 1) accommodated in the casing ([0024]) and comprising a porous silicon carbide sinter (see claim 1) carrying an exhaust gas purification catalyst (see claim 1), the honeycomb-like filter being configured to remove particulates in an exhaust gas (filter, see claim 1);
and

a regeneration device configured to allow heatup of the filter before regeneration (see Drawing 5).

Claim Rejections - 35 USC § 103

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwamoto (US 5,853,459) in view of Ono et al. (JP 11-236813 A1).

Regarding claim 1, Kuwamoto discloses an exhaust gas purification apparatus comprising:

a casing (14a);

a honeycomb-like filter (col. 5 lines 48-65) accommodated in the casing (Fig. 4) and comprising a porous filter (col. 6 lines 12-19) carrying an exhaust gas purification catalyst (col. 6 lines 54-59), the honeycomb-like filter being configured to remove particulates in an exhaust gas (see abstract); and

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a regeneration device configured to allow heatup (via exhaust gas flow and heater, 17a) of the filter before regeneration (see Fig. 4).

While Kuwamoto discloses a filter for high temperature operation, Kuwamoto fails to teach the porous filter made from sintered silicon carbide.

Ono also discloses a exhaust gas purification system and teaches a sintered silicon carbide filter in order to provide a preferential filter than can withstand the high temperature requirements of the regeneration cycle ([0012]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the sintered silicon carbide filter, as taught by Ono, in the exhaust gas purification system of Kuwamoto in order to provide a filter than can preferentially withstand the high temperature requirements of the regeneration cycle.

Regarding claim 9, Kuwamoto further discloses a first pressure sensor configured to detect a backpressure value of the exhaust gas upstream to the honeycomb-like filter and a second pressure sensor configured to detect a backpressure value of the exhaust gas downstream to the honeycomb-like filter (see 19a in Fig. 3), wherein the regeneration device is configured to calculate a pressure loss based on the backpressure value of the exhaust gas upstream to the honeycomb-like filter and the backpressure value of the exhaust gas downstream to the honeycomb-like filter and to

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detect an amount of the particulates deposited in the honeycomb-like filter (col. 8 lines 49-65).

6. Claims 1, 4, 7-13 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi (US 5,701,735) in view of Ono et al. (JP 11-236813 A1).

Regarding claims 1, 12, and 21, Kawaguchi discloses an exhaust gas purification apparatus comprising:

- a casing (Fig. 5);

- a honeycomb-like filter (col. 1 lines 15-21, (2))

accommodated in the casing (Fig. 5) and comprising a porous filter (such as ceramic foam, col. 1 lines 15-21) carrying an exhaust gas purification catalyst (col. 11 lines 55-59), the honeycomb-like filter being configured to remove particulates in an exhaust gas (see abstract); and

- a regeneration device configured to allow heatup (via exhaust gas flow and heater, 15) of the filter before regeneration (see Fig. 5).

While Kawaguchi discloses a filter for high temperature operation, Kawaguchi fails to teach the porous filter made from sintered silicon carbide.

Ono also discloses a exhaust gas purification system and teaches a sintered silicon carbide filter in order to provide a preferential filter than can withstand the high temperature requirements of the regeneration cycle ([0012]).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to use the sintered silicon carbide filter, as taught by Ono, in the exhaust gas purification system of Kawaguchi in order to provide a filter than can preferentially withstand the high temperature requirements of the regeneration cycle.

Regarding claims 4, 10, 13, 19 and 22, Kawaguchi, as discussed in claims 1, 12 and 21 above, further discloses a switch valve (9) positioned upstream (as in Fig. 5), which provides a functional equivalent of positioning the switch downstream, to the casing and configured to switch a flow of the exhaust gas (see Fig. 5), wherein the regeneration device comprises a first temperature detector (13) configured to detect a temperature in the casing (at the outlet, see Fig. 5), a second temperature detector (11) configured to detect a temperature of the exhaust gas (at the inlet, see Fig. 5), and a processor (30) configured to make a comparison of the temperature in the casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the filter with exhaust gas (col. 4 lines 46-60). Kawaguchi also discloses a heating means (15) for heating the filter.

Regarding claims 7, 8, 16 and 17, Kawaguchi, as discussed in claims 1 and 12, further discloses an electric heating device (15), controlled by the processor (30) configured to heat the honeycomb filter (col. 6 lines 30-38).

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Regarding claims 9 and 18, Kawaguchi, as discussed in claims 1 and 12 above, further discloses a first pressure sensor configured to detect a backpressure value of the exhaust gas upstream to the honeycomb-like filter and a second pressure sensor configured to detect a backpressure value of the exhaust gas downstream to the honeycomb-like filter, wherein the regeneration device is configured to calculate a pressure loss based on the backpressure value of the exhaust gas upstream to the honeycomb-like filter and the backpressure value of the exhaust gas downstream to the honeycomb-like filter and to detect an amount of the particulates deposited in the honeycomb-like filter (col. 16. lines 9-14).

Regarding claims 11 and 20, Kawaguchi, as discussed in claims 4 and 13 above, further discloses:

- a second casing (Fig. 5);

- a second honeycomb-like filter (3) accommodated in the second casing and comprising a comprising a porous filter (such as ceramic foam, col. 1 lines 15-21) carrying an exhaust gas purification catalyst (col. 6 lines 54-59), the second honeycomb-like filter being configured to remove particulates in an exhaust gas (see abstract);

- a second switch valve (9, which is a 3 way valve and acts as 2 valves) positioned upstream (as in Fig. 5), which provides a functional equivalent of positioning the switch downstream, to

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the second casing and configured to switch a flow of the exhaust gas,

wherein the regeneration device further comprises a third temperature detector (14) configured to detect a temperature in the second casing (see Fig. 5), and a processor (30) configured to make a comparison of the temperature in the second casing and the temperature of the exhaust gas, open the switch valve based on the comparison and preheat the filter with exhaust gas (col. 4 lines 46-60).

While Kawaguchi discloses a second filter for high temperature operation, Kawaguchi fails to teach the porous filter made from sintered silicon carbide.

Ono also discloses a exhaust gas purification system and teaches a sintered silicon carbide filter in order to provide a preferential filter than can withstand the high temperature requirements of the regeneration cycle ([0012]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the sintered silicon carbide filter, as taught by Ono, in the second filter of the exhaust gas purification system of Kawaguchi in order to provide a second filter than can preferentially withstand the high temperature requirements of the regeneration cycle.

7. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi (US 5,701,735) and Ono et al. (JP 11-

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236813 A1) as applied to claims 4 and 13 above, and further in view of Sasaki et al. (US 5,732,554).

Regarding claims 5 and 14, while Kawaguchi does disclose the use of a 3-way valve (9) in the exhaust purification system, Kawaguchi is silent as the exact type of valve that is employed in this service.

Sasaki also discloses an exhaust gas purification device that utilizes a 3-way valve. Sasaki teaches an electromagnetic valve (51) that is preferentially utilized in 3-way valve service (col. 4 lines 53-61).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an electromagnetic valve (as in Sasaki) in the exhaust gas purification system of Kawaguchi as a preferential valve to use in 3-way valve service.

8. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi (US 5,701,735) in view of Ono et al. (JP 11-236813 A1) as applied to claims 4 and 13 above, and further in view of Kuwamoto et al. (US 5,853,459).

Regarding claim 6, Kawaguchi, as discussed in claim 4 above, further discloses a processor (30) comprising a CPU, a RAM, and a ROM (see Fig. 2), however, Kawaguchi is silent on the temperature detectors (first and second) comprising a thermocouple in the high temperature environment of regenerating filters.

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Kuwamoto also discloses an exhaust purification system that utilizes temperature sensors. Kuwamoto teaches thermocouples as a preferential way of obtaining temperature readings in a high temperature environment (col. 61 lines 42-48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize thermocouples, as in Kuwamoto, in the exhaust gas purification system of Kawaguchi as a preferential means for obtaining temperature readings in high temperature service.

Response to Arguments

9. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Merkling whose telephone number is (571) 272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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